TE- 300/500W –WV Series Inverters
User Manual

System Function

- **Display function**

  1、 AC voltage display

  When the 125VAC LED lit up, it means the AC output is 125V.

  When the 230VAC LED lit up, it means the AC output is 230V.

  2、 Outage display

  When the Fault LED lit up, is means there is no electricity or the output is fail, and the inverter restart.

  3、 Power shows

  Power output LED: The 5 red LEDS take turns lighting, the quicker the lights move, the more power output.

  4、 AC frequency display

  When the 50Hz LED lit up, it means the input frequency is 50Hz.

  When the 60Hz LED lit up, it means the input frequency is 60Hz.

  5、 DC over-voltage display

  When the Fault LED and the "HIGH" LED lit up, it means the DC input is over 62VDC

  6、 DC under- voltage display

  When the Fault LED and the "LOW" LED lit up, it means the DC input is low 22VDC.

  7、 Power adjust display

  1) When "ST" LED flashing, it means power is in adjusting condition.

  a. When the "ST" LED and "HIGH" LED lit up, it means the power is increase.

  b. When the "ST" LED and "LOW" LED lit up, it means the power is decrease.

  2) When "ST" LED long on time, is means the power is locked, and the inverter works.

- **6-grade power search**

  In overcast weather,the solar battery's output current is extremely tiny, then inverter will automatic open 6-grade power search function.

  2、The program can automatically open power adjustment for 6 times.

  3、The current direction can adjust from the maximum to the minimum.

  4、In automatic adjustment process, we will see the LOW light flashing.And the power will keep as a starting point, from 0 to the maximum output power, and it will restart at most for 6 times, then locked in the maximum power, the ST lamp long bright.

  5、It need 10 minutes for 6-grade power search.

- **Wide voltage input(22-60VDC）**

  Achieve wide voltage input.

  1、DC voltage input：22-60VDC

  2、Second level power variable voltage conversion

- **High-frequency two-way and one-way grid function**

  1、 High frequency direct modulation, AC half wave synthesis

  2、 Two-way grid means: Load consume directly. And can reverse AC current transmission.

  3、 One-way grid means: Load consume directly. And banned reverse AC current transmission.

- **Kinds of frequency output function.**

  It can apply to 50Hz and 60Hz frequency of AC.

  Frequency range: 45Hz ~53Hz/55Hz~ 63Hz

- **directly connected to the solar panels (do not need to connect the battery)**

  Using precise Dynamic differential pressure type MPPT function, APL functions, the inverter automatically adjust the solar panels of maximum output power，simply connect the solar panel to the grid inverters. Do not need to connect the battery.

  1、 Differential pressure type MPPT: 0.1 V accuracy

2、 Power lock: 10W (AC output)

- **AC 0 angle with high precision auto-detection**

AC phase angle of 0 through isolation amplifier then input to the MCU for high-precision detection and analysis. The phase shift rate is less than 1%, thus achieve high-precision with phase modulation AC output together.

1、 AC phase shift: < 1%

2、 Over-zero protection: 0.2 VAC

3、 AC switching: 50Hz / 60Hz

Synchronous High-frequency Modulation

In the process of the grid, usually adapt the same phase angle in parallel. (ie, When the two-phase alternating current total is equal to 0.Use switch to combination the two AC fusion) and the product is rectified AC half-frequency AC to 100Hz first, then the machine use the high frequency current in the circuit and semi-100Hz frequency alternating current generated combination, to achieve high-frequency modulation.

1、 Modulation synthesis: half wave and full-bridge modulation synthesis (100Hz / 120Hz)

2、 Synthetic way: MOSFET full-bridge

3、 High frequency: 50KHz

Pure Sine Wave Output

Use SPWM directly to make pure sine wave output.

1、Output waveform: Adopt complementary PWM to push-pull pure sine wave.

2、Generate means: enhancement-mode SPWM

- **Automatic Sensing Function Solar Luminosity**

Use the latest luminosity perception operation technology. The different illuminate angle and intensity of the solar panel will produce different current output. Use advanced CPU to operate the different illuminance and the data can be directly displayed on the LCD. Then you can visually see the sense of the strength of the sun unit. Used more convenient.

1、 Luminosity sampling point ： power sampling point

2、 High precision AD sampling: integral AD sampling method

Power Automatically Locked (APL)

In different current fluctuations, we should use the MPPT function. When the MPPT function adjusted to the maximum power point, the product automatically powers locked in maximum power point, then made the output power more stable.

1、Power lock: The biggest sampling point of MPPT.

Automatically Adapt To Different Load Power Factor

Adapt to any of the power load.

- **Constant Current, Constant Power**

This product is constant current, constant output power, without any overload, over-current phenomenon.

- **Automatically Shut Down When The Power Output Of a Fault**

When the city power system is in failure, the inverter will automatically turn off the output.

Current Limit Protection

Current limit

- **Stack Multiple Machines**
- Multiple small power inverters in parallel can achieve large output power.
- **High-Frequency High Conversion Rate**

Adapt high frequency converter, the output more efficient.

Maximum Power Point Tracking (MPPT)

Because the current intensity and the voltage changes at any time, if there is no power point tracking, there will be a lot of problems. In the past time, usually adopt a solar controller, but this product uses high-precision

MPPT operation power, automatic and immediate adjust the solar panels output power at the maximum output point, then achieve a stable output purposes.

MPPT is for short of " Maximum Power Point Tracking". It means the controller can sense the voltage of the solar panels on time, and can track the highest voltage and current (VI).Then made the inverter discharge to power grid with the highest efficiency.

The peak voltage (Vpp) of the solar panels is about 19.5V when it in factory. And the environment temperature is 25 ° C. The reason of setting this temperature(interestingly, different from the subjective imagination, we ordinary people the conclusion may let us surprised) is that when the weather is very hot, solar panels' peak voltage will fall to about 17.5 V while in cold weather, the peak voltage can achieve 20.8 V.

Now we back to contrast the difference of MPPT solar energy grid inverter and traditional inverter. The traditional solar inverter is a bit like the manual gearbox. When the engine speed increase, while the gearbox gear don't increase at the same time, it will definitely affect the speed of the car. For traditional inverter speaking, the parameter output power is been set in factory. It likes a car have been fixed set on fixed 1 gears, no matter how powerfully you trample accelerator, the speed of a car is limited. While have the MPPT function it will be different, it is automatically. It will automatically adjust the gears according to the engine' speed, so it can make cars in the most gears in a reasonable efficiency standard operation. It means the MPPT controller can track the maximum power point of solar panels in real-time then express the biggest efficiency of solar panels. The higher the voltage, the more power can be output through the MPPT. Thus improve the charging efficiency. Theoretically speaking, using MPPT, the efficiency can be increased by 50% compared with the traditional inverter. But due to environmental impact and various around energy loss, the ultimate efficiency can improve 20%-30% according to our actual testing.

Parameter Table

KD-WVC Grid-series models	300Watt	500Watt
Recommend use solar panels	400Wp	600Wp
DC MAX input current	20A	40A
AC MAX output power	300Watt	500Watt
DC MAX Open-circuit input-voltage	100VDC	
DC input voltage range	22~60VDC	
MAX output power factor	0.99	
DC input Reverse voltage protection	FUSE	
AC output voltage range	（120V versions：90~140VAC）（230V versions：180~260VAC）	
AC frequency range	45-53Hz/55-63Hz	
Output current total harmonic distortion	THDIAC <5%	
AC Phase	<0.5%	
Islanding protection	VAC；f AC	
Output short circuit protection	Current-limiting	
Show	LED mode：power instruction；voltage instruction；AC frequency instruction；over-voltage instruction	

Installation	Wall hanging
Cooling	Fan
Communication way	● 60KHz modulation，power line carrier-current communication
Standby Power	<1W
Night Power	<1W
Ambient temperature range	-25 ℃~60℃
Humidity	0~99%(Indoor Type Design)
Waterproof	Indoor Type Design
Electromagnetic Compatibility	EN50081.part1 EN50082.part1
Power System Disturbance	EN61000-3-2 EN60950-1
Network test	DIN VDE 1026

Packing and weight

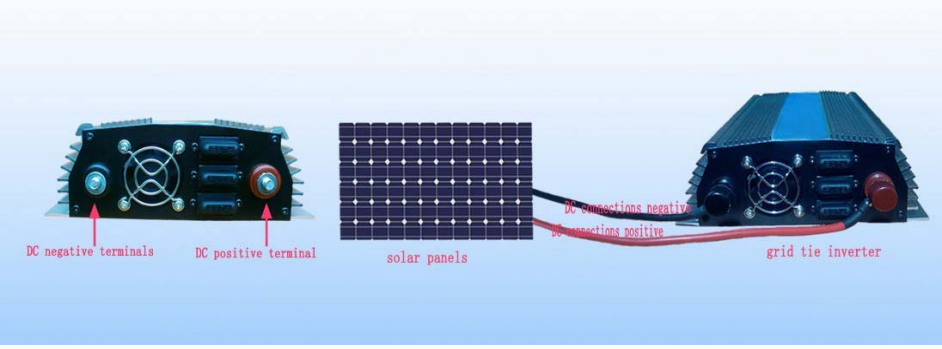
N.W(Each inverter)	1.3KG（300W/500W）
G.W(Each inverter)	1.8KG（300W/500W）
Each inverter size (L x W x H)	21 x 16.5 x5.3CM
Inner carton size(L x W x H)	30x20.3x11.3CM
Master carton size(L x W x H)	42x31.5x36.5CM(6 pieces/carton)
N.W(Outer packing)	10.8KG(300W/500W)
G.W(Outer packing)	11.5KG(300W/500W)
AC power cord length	1.8M

User Guide

1、Installation Connection

1、Red terminal: Connect DC positive, black terminal: Connect DC negative. Show in Figure 1.

Figure 1



2、AC socket: Connect to the mains. Put the side of the AC cord which has holes into the inverter with 3 foot outlet and the other side of the AC cord to home 3PIN AC outlet. Show in Figure 2.

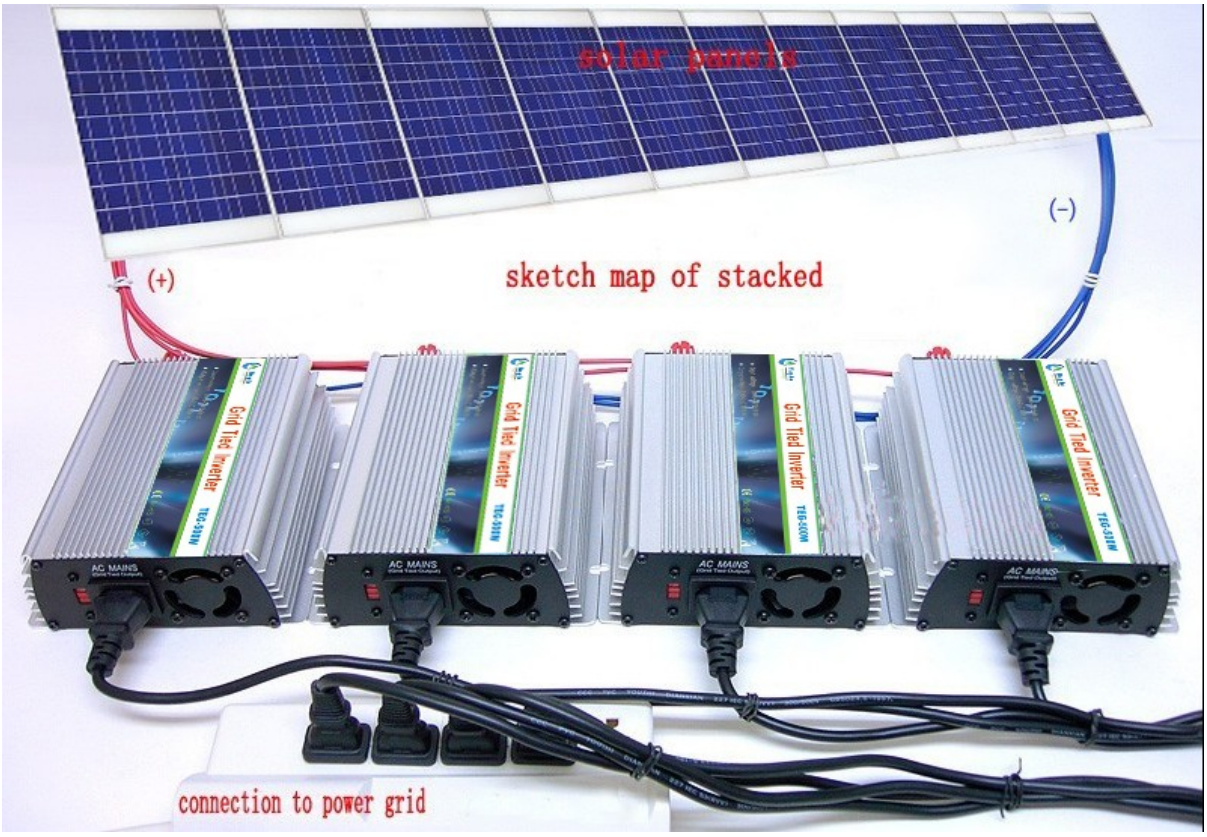
Figure 2 Figure 3

3、Switch: Connect the connections in right way, then turn on the switch. The inverter starts to work.

3、Stack using

In order to achieve higher power use requirements, this product can be stacked, such as: 4 grid inverter1000W stacking can achieve 4000W.And the number of the stacking is unlimited. Used as shown in Figure 6:

Figure 6



4、Input and output

1、DC input limit

✧ Input voltage range: 22V to 60V

Solar Panel: Recommend using the power more than 30W.

1） Reference voltage is 18V's solar panel. Suggest using two pieces of solar panel in series.

2） Reference voltage is 36V's solar panel.

3） Reference voltage is 48V's solar panel.

Recommend using multiple solar panels. Solar panel in series will result in high-input voltage which will exceed the working voltage range of the inverter.

Wind turbine system: Rated voltage 24VDC, maximum voltage 48VDC.

2、AC output：

✧ Voltage range of the inverter whose output is 220V AC.: 180V - 260V，50HZ

✧ Voltage range of the inverter whose output is 110V AC.: 90V - 140V，60HZ

Notes

---Non-professionals do not disassemble. Only qualified personnel may repair this product.

---Please install inverter in the low humidity and well-ventilated place to avoid the inverter over-heating, and clear around the inflammable and explosive materials.

---When using this product, avoid children touching, playing, to avoid electric shock.

---Recommended Maximum DC input 4AWG cable capable of handling more than 50A of the cable size.

---Optimal length of the DC input line 8M or less, long cable will allow solar panels to the inverter DC voltage drop caused by wear and tear.

---Connected to a power outlet to provide AC.

---Connected solar panels, battery or wind generators DC input DC power supply cable.

---Proposed wind power plant with its own charge controller and load dump.

Accessories for product

One standard AC wire

One user manual